

CLAIMS

1. A substantially pure protein having the amino acid sequence selected from the group consisting of: SEQ ID NO: 2, a mutant thereof, a fragment thereof, SEQ ID NO: 4, a mutant thereof, and a fragment thereof, wherein said protein has polo-like kinase activity.

2. The protein of claim 1 wherein said protein has the amino acid sequence selected from the group consisting of: SEQ ID NO: 2, a mutant thereof, and a fragment thereof.

3. The protein of claim 1 wherein said protein has the amino acid sequence selected from the group consisting of: SEQ ID NO: 4, a mutant thereof, and a fragment thereof.

4. An isolated nucleic acid molecule that comprises a nucleic acid sequence that encodes the protein of claim 1.

5. A recombinant expression vector comprising the nucleic acid molecule of claim 4.

6. A host cell comprising the recombinant expression vector of claim 5.

7. An isolated nucleic acid molecule that comprises a nucleic acid sequence that encodes the protein of claim 2.

8. A recombinant expression vector comprising the nucleic acid molecule of claim 7.

9. A host cell comprising the recombinant expression vector of claim 8.

10. An isolated nucleic acid molecule having a nucleic acid sequence selected from the group consisting of: SEQ ID NO: 1, a fragment thereof having at least 10 nucleotides, SEQ ID NO: 3, and a fragment thereof having at least 10 nucleotides.
11. The isolated nucleic acid molecule of claim 10, wherein the nucleic acid sequence selected from the group consisting of: SEQ ID NO: 1 or a fragment thereof having at least 10 nucleotides.
12. A recombinant expression vector comprising the nucleic acid molecule of claim 11.
13. A host cell comprising the recombinant expression vector of claim 12.
14. An isolated antibody which binds to an epitope on SEQ ID NO: 2 or an epitope on SEQ ID NO: 4.
15. A method of identifying a modulator of a *Hemipteran* polo-like kinase protein activity by performing a test assay comprising the steps of:
 - a) contacting the protein of claim 2, or a host cell or host organism containing or expressing said protein, with a test compound, in such a way that a signal may be generated that is representative for the interaction between said test compound and said target; and optionally
 - b) detecting the signal that may thus be generated, said signal identifying the modulator of said protein.
16. The method of claim 15 wherein said *Hemipteran* polo-like kinase protein has an amino acid sequence selected from the group consisting of: SEQ ID NO: 2, a mutant thereof, and a fragment thereof.

17. The method of claim 15 wherein said *Hemipteran* polo-like kinase protein has an amino acid sequence selected from the group consisting of: SEQ ID NO: 4, a mutant thereof, and a fragment thereof.

18. The method of claim 15 further comprising the performance of a positive control assay and/or a negative control assay and/or a control assay using a non-*Hemipteran* polo-like kinase.

19. A method of identifying an inhibitor of a *Hemipteran* polo-like kinase protein activity by performing a test assay comprising the steps of :

- a) contacting the protein of claim 2, or a host cell or host organism containing or expressing the protein, with a test compound, in such a way that a signal may be generated that is representative for the interaction between said test compound and said target; and optionally
- b) detecting the signal that may thus be generated, said signal identifying the inhibitor of said amino acid sequence.

20. The method of claim 19 wherein said *Hemipteran* polo-like kinase protein has an amino acid sequence selected from the group consisting of: SEQ ID NO: 2, a mutant thereof, and a fragment thereof.

21. The method of claim 19 wherein said *Hemipteran* polo-like kinase protein has an amino acid sequence selected from the group consisting of: SEQ ID NO: 4, a mutant thereof, and a fragment thereof.

22. The method of claim 19 further comprising the performance of a positive control assay and/or a negative control assay and/or a control assay using a non-*Hemipteran* polo-like kinase.

23. A method of preparing an isolated protein having the amino acid sequence selected from the group consisting of: SEQ ID NO: 2, a mutant thereof, a fragment thereof, SEQ ID NO: 4, a mutant thereof, and a fragment thereof comprising the step of isolating said protein from a host cell of claim 6.
24. A method of controlling an insect, comprising contacting the insect with the modulator of the protein of claim 1.
25. A method of controlling an insect, comprising contacting the insect with the modulator of claim 2.
26. A method of controlling a *Hemipteran* insect, comprising contacting the *Hemipteran* insect with the modulator of claim 1.
27. A method of controlling a *Hemipteran* insect, comprising contacting the *Hemipteran* insect with the modulator of claim 2.
28. A method of controlling a *Hemipteran* insect, comprising contacting the *Hemipteran* insect with the inhibitor of claim 1.
29. A method of controlling a *Hemipteran* insect, comprising contacting the *Hemipteran* insect with the inhibitor of claim 2.
30. An antibody that specifically binds to the protein of claim 1.
31. The antibody of claim 30 wherein said antibody is a monoclonal antibody.
32. The antibody of claim 30 wherein said antibody specifically binds to a protein that has the amino acid sequence selected from the group consisting of: SEQ ID NO: 2, a mutant thereof, and a fragment thereof.

33. The antibody of claim 30 wherein said antibody specifically binds to a protein that has the amino acid sequence selected from the group consisting of: SEQ ID NO: 4, a mutant thereof, and a fragment thereof